

Claims

What is claimed is:

- 5 1. A method for transitioning a call with a mobile terminal from a cellular connection to a local wireless connection, the method comprising:
 - 10 a) receiving a handoff request from a wireless switch supporting a call to the mobile terminal over a cellular access network, the call comprising a first connection from the wireless switch to the mobile terminal and a second connection between the wireless switch and a remote terminal;
 - 15 b) effecting establishment of a third connection to the mobile terminal via a terminal adaptor, which supports local wireless communications with the mobile terminal; and
 - c) providing a handoff instruction to the wireless switch to connect the second and third connections to effect handoff of the call from the cellular connection to the local wireless connection.
- 20 2. The method of claim 1 wherein the third connection is established in part between a wireline switch and the terminal adaptor.
- 25 3. The method of claim 2 wherein the handoff request is received and the handoff instructions are provided using a cellular protocol while the establishment of the third connection is effected using a public switched telephone network-based protocol.
- 30 4. The method of claim 2 wherein the third connection is established in part between first and second media gateways, the first media gateway connected to the wireless switch via a cellular-based trunk and the second media gateway connected to the wireline switch via a public switched telephone network-based trunk, the method further comprising sending call initiation messages to the first and second media gateways and the wireline switch to establish the third connection.

5. The method of claim 4 wherein the first and second media gateways facilitate interworking between the cellular-based trunk and the public switched telephone network-based trunk over a packet network.
- 5 6. The method of claim 2 wherein the third connection is established using a directory number associated with the mobile terminal when supported via the terminal adaptor.
7. The method of claim 1 wherein the third connection is established in
10 part over a packet network operatively coupled to the terminal adaptor.
8. The method of claim 7 wherein the handoff request is received and the handoff instructions are provided using a cellular protocol while the establishment of the third connection is effected using a packet-based
15 communication session protocol.
9. The method of claim 7 wherein the third connection is established in part between a first media gateway and the mobile terminal through the terminal adaptor, the first media gateway connected to the wireless
20 switch via a cellular-based trunk, the method further comprising sending control messages to the first media gateway and the mobile terminal to establish the third connection.
10. The method of claim 9 wherein the first media gateway facilitates
25 interworking between the cellular-based trunk and a packet-based session forming part of the third connection.
11. The method of claim 1 further comprising providing a handoff message to the wireless switch to confirm handoff to the third connection.
30
12. The method of claim 1 wherein the handoff request comprises a cell site identifier to which the wireless switch is attempting to handoff the call, the cell site identifier corresponding to the terminal adaptor.

13. The method of claim 12 wherein the cell site identifier is provided to the wireless switch by the mobile terminal.
- 5 14. The method of claim 12 wherein the wireless switch accesses the cell site identifier upon receiving a handoff request from the mobile terminal.
15. The method of claim 14 further comprising providing the cell site identifier to the wireless switch.
- 10 16. A method for transitioning a call with a mobile terminal from a cellular connection to a local wireless connection, the method comprising:
- 15 a) establishing a first connection for a call with a wireless switch via a cellular access network, the call comprising a second connection from the wireless switch to a remote terminal;
- b) sending a handoff request to the wireless switch to initiate a handoff;
- c) establishing a third connection with the wireless switch via a terminal adaptor; and
- 20 d) transferring support of the call from the first connection to the third connection.
17. The method of claim 16 further comprising determining local wireless communications with the terminal adaptor are possible.
- 25 18. The method of claim 17 wherein the handoff request is sent to the wireless switch upon determining the local wireless communications with the terminal adaptor are possible.
- 30 19. The method of claim 17 further comprising determining a degradation in communication ability with the wireless switch through the cellular access network, wherein the handoff request is sent to the wireless switch upon determining the degradation in communication ability

through the cellular access network and when the local wireless communications with the terminal adaptor are possible.

- 5 20. The method of claim 17 further comprising receiving user instruction to request a handoff, wherein the handoff request is sent to the wireless switch upon receiving the user instruction and when the local wireless communications with the terminal adaptor are possible.
- 10 21. The method of claim 16 further comprising sending a cell site identifier to the wireline switch in association with the handoff request, the cell site identifier associated with a service node adapted to initiate the third connection.
- 15 22. The method of claim 16 wherein establishing the third connection comprises answering an incoming call via the terminal adaptor.
23. The method of claim 22 further comprising determining the incoming call is the third connection for effecting the handoff.
- 20 24. The method of claim 23 wherein call information bearing on parties or terminals associated with the call is provided in association with the incoming call and the call information is used to determine the incoming call is the third connection for effecting the handoff.
- 25 25. The method of claim 22 wherein the incoming call is answered without providing a ring signal to a user.
26. The method of claim 16 further comprising releasing the second connection upon transferring support of the call.
- 30 27. The method of claim 16 further comprising sending a registration message to a service node adapted to cooperate with the wireless switch to initiate the third connection and connect the first and third connections to effect the handoff.

28. The method of claim 27 wherein the registration message is sent to the service node via the terminal adaptor through one of the group consisting of a wireline switch supporting the terminal adaptor, a data access network, and a packet network.
29. The method of claim 27 wherein the registration message is sent to the service node through the terminal adaptor via the wireless switch.
30. A system for transitioning a call with a mobile terminal from a cellular connection to a local wireless connection, the system comprising:
- a) at least one communication interface;
 - b) a control system associated with the at least one communication interface and adapted to:
 - i) receive a handoff request from a wireless switch supporting a call to the mobile terminal over a cellular access network, the call comprising a first connection from the wireless switch to the mobile terminal and a second connection between the wireless switch and a remote terminal;
 - ii) effect establishment of a third connection to the mobile terminal via a terminal adaptor, which supports local wireless communications with the mobile terminal; and
 - iii) provide a handoff instruction to the wireless switch to connect the second and third connections to effect handoff of the call from the cellular connection to the local wireless connection.
31. The system of claim 30 wherein the third connection is established in part between a wireline switch and the terminal adaptor.
32. The system of claim 31 wherein the handoff request is received and the handoff instructions are provided using a cellular protocol while the establishment of the third connection is effected using a public switched telephone network-based protocol.

- 5 33. The system of claim 31 wherein the third connection is established in part between first and second media gateways, the first media gateway connected to the wireless switch via a cellular-based trunk and the second media gateway connected to the wireline switch via a public switched telephone network-based trunk, the control system further adapted to send control messages to the first and second media gateways and the wireline switch to establish the third connection.
- 10 34. The system of claim 33 wherein the first and second media gateways facilitate interworking between the cellular-based trunk and the public switched telephone network-based trunk over a packet network.
- 15 35. The system of claim 31 wherein the third connection is established using a directory number associated with the mobile terminal when supported via the terminal adaptor.
- 20 36. The system of claim 31 wherein the third connection is established in part over a packet network operatively coupled to the terminal adaptor.
- 25 37. The system of claim 36 wherein the handoff request is received and the handoff instructions are provided using a cellular protocol while the establishment of the third connection is effected using a packet-based communication session protocol.
- 30 38. The system of claim 36 wherein the third connection is established in part between a first media gateway and the mobile terminal through the terminal adaptor, the first media gateway connected to the wireless switch via a cellular-based trunk, the control system further adapted to send control messages to the first media gateway and the mobile terminal to establish the third connection.

39. The system of claim 38 wherein the first media gateway facilitates interworking between the cellular-based trunk and a packet-based session forming part of the third connection.
- 5 40. The system of claim 30 further comprising providing a handoff message to the wireless switch to confirm handoff to the third connection.
- 10 41. The system of claim 30 wherein the handoff request comprises a cell site identifier to which the wireless switch is attempting to handoff the call, the cell site identifier corresponding to the terminal adaptor.
42. The system of claim 41 wherein the cell site identifier is provided to the wireless switch by the mobile terminal.
- 15 43. The system of claim 41 wherein the wireless switch accesses the cell site identifier upon receiving a handoff request from the mobile terminal.
- 20 44. The system of claim 43 wherein the control system is further adapted to provide the cell site identifier to the wireless switch.
- 25 45. A mobile terminal capable of transitioning a call from a cellular connection to a local wireless connection, the mobile terminal comprising:
- a) at least one communication interface;
 - b) a control system associated with the at least one communication interface and adapted to:
 - 30 i) establish a first connection for a call with a wireless switch via a cellular access network, the call comprising a second connection from the wireless switch to a remote terminal;
 - ii) send a handoff request to the wireless switch to initiate a handoff;

- iii) establish a third connection with the wireless switch via a terminal adaptor; and
- iv) transfer support of the call automatically from the first connection to the third connection.

5

46. The mobile terminal of claim 45 wherein the control system is further adapted to determine local wireless communications with the terminal adaptor are possible.

10

47. The mobile terminal of claim 46 wherein the handoff request is sent to the wireless switch upon determining the local wireless communications with the terminal adaptor are possible.

15

48. The mobile terminal of claim 46 wherein the control system is further adapted to determine a degradation in communication ability with the wireless switch through the cellular access network, wherein the handoff request is sent to the wireless switch upon determining the degradation in communication ability through the cellular access network and when the local wireless communications with the terminal adaptor are possible.

20

49. The mobile terminal of claim 46 wherein the control system is further adapted to receive user instruction to request a handoff wherein the handoff request is sent to the wireless switch upon receiving the user instruction and when wireless communications with the terminal adaptor are possible.

25

50. The mobile terminal of claim 45 wherein the control system is further adapted to send a cell site identifier to the wireline switch in association with the handoff request, the cell site identifier associated with a service node adapted to initiate the third connection.

30

51. The mobile terminal of claim 45 wherein to establish the third connection, the control system is further adapted to answer an incoming call via the terminal adaptor.
- 5 52. The mobile terminal of claim 51 wherein the control system is further adapted to determine the incoming call is the third connection for effecting the handoff.
- 10 53. The mobile terminal of claim 52 wherein call information bearing on parties or terminals associated with the call is provided in association with the incoming call and the call information is used to determine the incoming call is the third connection for effecting the handoff.
- 15 54. The mobile terminal of claim 51 wherein the incoming call is answered without providing a ring signal to a user.
- 20 55. The mobile terminal of claim 45 wherein the control system is further adapted to release the second connection upon transferring support of the call.
- 25 56. The mobile terminal of claim 45 wherein the control system is further adapted to send a registration message to a service node adapted to cooperate with the wireless switch to initiate the third connection and connect the first and third connections to effect the handoff.
- 30 57. The mobile terminal of claim 56 wherein the registration message is sent to the service node via the terminal adaptor through one of the group consisting of a wireline switch supporting the terminal adaptor, a data access network, and a packet network.
58. The mobile terminal of claim 56 wherein the registration message is sent to the service node through the terminal adaptor through via the wireless switch.